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The U.S. Support Program to IAEA Safeguards - How It Works

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Abstract
The U.S. Support Program to International Atomic Energy Agency (IAEA) Safeguards (USSP) was established in 1977 to transfer US technology and expertise to assist the IAEA Department of Safeguards because its limited budget and scope would not allow for R&D activities and the procurement of specialized or customized equipment. Over the years, the USSP and the Department of Safeguards have worked together continuously to develop and improve processes for requesting, selecting, and managing projects that support the Safeguards verification mission. This paper will discuss the main USSP processes for accepting and processing Safeguards requests, and managing and reporting task progress.

Introduction

Created in 1977, the USSP's central mission is to augment the IAEA's regular budget for safeguards activities with U.S.-sponsored expertise, equipment, and techniques. The USSP is one of twenty-one Member State support programs that provide the IAEA with additional safeguards support. U.S. extrabudgetary funding provides for, *inter alia*, safeguards-related instruments and methodologies, cost-free experts and shorter-term consultants, training, and the procurement of commercial, off-the-shelf equipment that collectively improve the effectiveness and efficiency of IAEA safeguards implementation.

Actions taken by the USSP are directed or guided by a number of formal guidelines as well as internal procedures, U.S. agency policy, and U.S. law. The Cooperation Arrangements and Guidelines,[1] signed by both the USSP and IAEA Safeguards in 2001, outline the typical coordination processes and support program-related roles of these entities. The formal memorandum of understanding between the U.S. and the IAEA, signed in July of 2004, governs the process of hiring and implementing junior professional officers (JPOs).[2] Subgroup on Safeguards Technical Support (SSTS) Process Statements[3] provide guidance specific to the operation of the USSP and include procedures for selecting contractors, monitoring their performance, reporting program expenses and progress, and provision of both cost free experts (CFEs) and JPOs. Process Statements also govern contractor proposals requirements, obligations for USSP-sponsored visits to the IAEA and participation in technical meetings, and special pension provisions for CFEs and JPOs.

Two organizations form the backbone of the USSP: the SSTS, an interagency group that approves and authorizes funding for USSP tasks, and the International Safeguards Project Office (ISPO), a support component providing technical and administrative management of USSP activities.

The SSTS is comprised of representatives from the Department of State (DOS), the Department of Energy (DOE), the Department of Defense, and the Nuclear Regulatory Commission. DOE chairs the SSTS and the SSTS provides oversight of the USSP by consensus.

The ISPO Office at Brookhaven National Laboratory (BNL) performs the day-to-day technical and administrative project management activities for the USSP including proposal solicitation, task progress and budget reporting, and technical oversight of USSP tasks. ISPO also maintains a Liaison Office within the U.S. Mission to UN Organizations in Vienna (UNVIE), employing a Liaison Officer to interface with counterparts in the Support Programme Coordination (SPC) office, Safeguards project managers and task officers, the IAEA Department of Management (MT), and the offices of Budget and Finance (MTBF), Procurement Services (MTPR) and Human Resources (MTHR).

Congress appropriates the majority of USSP funding through the DOS program "Nonproliferation, Anti-terrorism, Demining and Related Projects" (NADR). The DOS Bureau of International Security and Nonproliferation, Office of Multilateral Nuclear and Security Affairs (ISN/MNSA) proposes the allocation of NADR funds each year for designated IAEA missions, including the Program of Technical Assistance to IAEA Safeguards (POTAS) from which most USSP tasks are funded, or specific IAEA Safeguards activities, such as Safeguards Equipment and the Safeguards Information System. Over the last two years, annual POTAS and Safeguards Equipment funding have amounted to $14.4 million and $1 million dollars respectively. Other federal agencies may also choose to donate funds or in-kind support to Safeguards for selected activities. These efforts may or may not be coordinated with USSP.

Each year, DOS transmits directly a portion of the POTAS funds and all of the Safeguards Equipment funds to the IAEA to fulfill procurement and personnel contracts and pay for other activities authorized by the USSP. Remaining POTAS funds support USSP tasks conducted by U.S. national laboratories and the private sector. Initially, the USSP leaves funding at the IAEA and in the U.S. undesignated pending consideration and approval of the anticipated Safeguards requests that arrive continuously throughout the year. The USSP receives and addresses over 100 requests per annum.

Safeguards Request Process

The USSP was organized to receive and respond to requests from Safeguards (called SP-1s), and only in rare cases will the USSP initiate a task on behalf of Safeguards. The USSP may occasionally initiate a task to strengthen the effectiveness of their internal operations. ISPO itself cannot approve a new SP-1 or approve a funding request over $25,000.

Requests originate from IAEA Safeguards Department staff and are generally based on established Safeguards needs and R&D objectives outlined in the Safeguards' "Research and Development Programme for Nuclear Verification" (Programme). This biennial publication coordinated by the SPC Unit in the Division of Safeguards Technical Support (SGTS), describes the strategic focus areas and prioritized activities identified and agreed to by Safeguards officials. Safeguards uses the

Programme as a working document for implementation of new safeguards methodologies and tools and for planning solicitations to Member States Support Programs (MSSPs) for technical assistance. The 2008-2009 Programme[4] describes twenty-three R & D projects in terms of background, needs, project objectives and activities, active and proposed MSSP tasks, and activities supported by the IAEA regular budget.

SP-1s consist of a Safeguards-reviewed and approved work plan including the project's objectives and requirements, the problem definition and the proposed scope of work. This is the basic information necessary for MSSPs to assess the request, although they may request more information or clarification. After an SP-1 is drafted and coordinated with SPC, it is sent to the Director of SGTS for signature, and then forwarded to one or more selected MSSPs. Safeguards may also send ad hoc requests not directly tied to its Programme or task extension requests which add to or modify the scope of existing tasks although they follow the same processes in Safeguards and the USSP as SP-1s.

Upon receipt of an SP-1, the USSP reviews it for compatibility with U.S. policy objectives and USSP priorities. SSTS and ISPO may discuss the suitability of the SP-1 in the context of USSP objectives, available funding, and its relationship to related work performed in the U.S. If there is no interest in pursuing it, the USSP may decline the SP-1 and notify Safeguards officials through the Vienna Liaison Office. If the USSP is interested, ISPO and the SSTS determine a general approach for responding to the SP-1. If necessary, the USSP will negotiate with Safeguards for modifications to the scope of the request before proceeding.

ISPO then determines whether the requested effort is appropriate for the private or public sector and solicits proposals from prospective contractors. The USSP follows a "Buy American" policy as much as possible, using U.S. companies and national laboratories for USSP tasks to the extent practicable. The public sector (typically U.S. national laboratories) is prohibited by law from competing with the private sector. National labs, however, possess combinations of unique capabilities, infrastructure, and expertise unavailable in the private sector and are often better-suited for addressing Safeguards needs. Private sector contractors are therefore generally limited to project management and management consulting, meeting facilitation, production of off-the-shelf equipment and information technology systems, software development and some training. According to USSP rules for competition, the scope of the request may also justify a sole supplier.

ISPO requires that all contractors prepare proposals according to USSP requirements. After receipt of proposals, ISPO reviews them first to ensure that they are both responsive to the SP-1 and compliant with USSP rules. ISPO then forwards them to the Safeguards requestor for review. The USSP encourages requestor selection of the proposal that best responds to the request and also has the highest likelihood of success. If deemed necessary, ISPO suggests a round or two of question and answer sessions between Safeguards and the contractors either during Safeguards review or prior to finalization. Once the Safeguards requestor reaches a decision, he or she notifies ISPO. ISPO and Safeguards may then negotiate modifications to the scope of work, the level of effort, deliverables, and deadlines if necessary to better meet Safeguards or USSP objectives, even if differing from the original proposal.

With the understanding that the SSTS finds the scope of the SP-1 acceptable and that the proposed budget and level of effort appear reasonable, ISPO recommends that SSTS accept the SP-1 and allocate funding. The SSTS then either agrees to funding or requests clarification or changes. Once a final agreement is reached, a new USSP task is created. ISPO then notifies Safeguards officials through the Liaison Officer, and makes arrangements for funding the task.

ISPO generally addresses Safeguards requests as they come in, creating a "first in, first out" pattern, but priority and urgency are also carefully considered. Some requests may take longer to address due to policy reasons, difficulty in agreeing to the scope of the request, difficulty finding contractors, changes in schedules, or other complications.

Task Management and Tracking

Both ISPO and Safeguards track and monitor task progress to ensure successful completion in a timely manner. They also confirm that tasks provide products or results that end users are committed to use, and that the USSP, Safeguards, and other stakeholders receive accurate and adequate feedback on the experience, products, and results. The USSP encourages close Safeguards involvement with task progress, and for high-risk projects, ISPO may require regular project meetings among Safeguards, contractors, ISPO task monitors and USSP contractors.

USSP guidelines direct ISPO monitoring of contractor performance. The task reporting process requires continuous project feedback and exchange of information through ad hoc and scheduled meetings, formal reports, email, and personal communication among ISPO, Safeguards, and project contractors. In general, task contractors report task progress, financial data, and other issues to ISPO and the Safeguards task officer reports to SPC. ISPO reconciles any reporting differences with Safeguards on at least a quarterly basis through email, project meetings and meetings between the Liaison Officer and Safeguards or other IAEA staff. Contractors submit quarterly reports to ISPO for publication as the "Capsule Summary of Active Tasks," a document of brief task progress and spending reports. Reports are also included in the yearly "Digest of Completed Tasks," a summary of completed tasks and their main results.

Once USSP and the IAEA jointly decide that a task is complete, ISPO and Safeguards close the task. A year or so after task closure, Safeguards prepares application reports, which assess the extent that a task's targeted goals were attained and how the task product has been used. If no use was made of the task product, it is important to report the reasons.

Tasks are classified according to type, specified in the IAEA's SP-1:

A. Measurement technology
B. Training
C. System studies
D. Information processing and evaluation
E. Containment and surveillance
F. Safeguards evaluation and administrative support
G. Special tasks

After the SSTS approves a request, ISPO assigns the corresponding task a POTAS number and the letter of the corresponding type of task. The task retains the original SP-1 title.

Cost free Experts and Junior Professional Officers

The USSP supports a number of CFE and JPO positions in the Department of Safeguards. The "cost free" designation applies only to the IAEA. The USSP allocates funds to the IAEA for these positions, and the IAEA then compensates the CFEs and JPOs. CFEs either provide expertise generally unrepresented in the Safeguards workforce, or they work on urgent or otherwise high-priority projects. The initial assignment to the IAEA is usually a one- or two-year term, but may be extended to a total of five years, depending upon the continued needs of Safeguards and SSTS approval. JPOs are younger professionals who may have just graduated from college or have some work experience beyond their bachelor's or master's degrees. They perform essential safeguards work under the supervision of a more senior staff member. The goal of the JPO program is to introduce young professionals to safeguards and other nonproliferation careers and to give them experience within the international civil service. JPOs are offered a one-year term with an option for a one-year extension (if agreed on by both the IAEA and the JPO). CFEs and JPOs sign personnel contracts with the IAEA, which gives them the same staff responsibilities and privileges as other IAEA employees.

Both CFE and JPO positions are initiated through the SP-1 request process. If the requested position fits USSP priorities, policies, and available funding, ISPO will then recruit candidates. The SSTS approves CFE and JPO candidates before ISPO submits them to the IAEA requestor, and the USSP strives to provide more than one candidate for consideration. Safeguards interviews the approved candidates, makes a selection, and notifies ISPO, which then recommends that SSTS approve the position and obligates supporting funds to the IAEA. The USSP treats CFE and JPO positions like other USSP tasks and reports quarterly progress and funding status. CFE and JPO tasks are categorized by subject area and carry typical POTAS task numbers.

Meetings and Workshops

IAEA-Hosted Meetings

Safeguards hosts an annual review meeting at the IAEA to update the USSP on Safeguards R&D project plans, task progress, and programmatic changes in either Safeguards or the IAEA that may impact Safeguards and USSP processes and decisions. USSP contractors are invited to attend this meeting. The USSP and Safeguards meet at the IAEA for an annual task review, a more specific meeting at which the participants review the status of all active tasks and requests. The USSP participates in the biennial MSSP Coordinators' Meeting organized by Safeguards at IAEA headquarters to introduce Member States to its updated R&D program.

USSP Meetings

Typical USSP meetings include SSTS meetings, which are held six to eight times per year between ISPO and the SSTS to discuss and make decisions on requests recommended for approval, task issues, and other related USSP topics. The SSTS may also approve requests by email. The USSP holds a yearly planning meeting to reflect more broadly on the operation and mission of the USSP,

update USSP priorities and processes, forecast funding needed for larger and multi-year projects, and to discuss other topical subjects.

Each year, the USSP schedules a visit to selected contractors at the national laboratories or private sector to get a first-hand view of work performed under USSP funding or to see what is new and different and might be useful in future USSP endeavors. Throughout the year, the USSP may meet with or confer by teleconference with one or more of the other MSSPs to discuss joint requests and tasks, or special topics of mutual interest. ISPO meets weekly to focus on administrative and project management issues.

USSP and Contractor Visits to IAEA

Many of the USSP tasks require USSP or its contractors to travel to Vienna to conduct the work or report on progress. U.S. federal employees and contractors on official business to the IAEA are all subject to DOS rules for country clearance and reporting to the DOS mission (UNVIE) in Vienna. In addition, all U.S. contractors funded under USSP tasks must follow DOE foreign travel rules.

USSP-Sponsored Workhops

In response to IAEA requests, the USSP has organized and facilitated technical roadmapping workshops in the United States[5] The IAEA selects a workshop theme based on emerging needs or on how best to modernize, upgrade, and/or replace existing tools and methods. ISPO works closely with the IAEA to plan these workshops, including the selection of technical experts. Workshop attendance includes participants from many countries, including IAEA and U.S. sources, although the meeting usually takes place in the U.S.

Future considerations

Under the theme of continuous process improvement, a number of actions and suggestions are listed below.

1. Modern tools may be useful for making USSP and Safeguards joint processes more efficient. Both USSP and Safeguards are replacing their task management and tracking systems with web-interfaced process flow and recordkeeping systems. This is an opportune time for pursuing new methods to make these systems complementary and to avoid duplication of effort. Videoconferencing is increasingly used to improve the quality of our communications, especially in light of increasing travel costs.

2. In the last few years, the USSP and Safeguards have identified lessons learned to apply to project management and coordination improvements, especially for the development and subsequent commercialization of safeguards equipment in which more than one contractor is involved and sometimes more than one MSSP funds the effort. Progress has been observed in new tasks applying these lessons.

3. A recent suggestion for improving project management and coordination of tasks was including USSP contractors in the annual task review of projects with the USSP and Safeguards. This direct feedback on task performance encourages swift action to correct any identified problems.

4. The USSP may further evaluate the possibility of streamlining some of the processes to improve efficiency, based on the development and implementation of new project management tools. Routine requests which are funded annually or more frequently might make good case studies.

5. The authors of this paper noted some differences between a number of the procedures outlined in the Cooperation Arrangements and Guidelines document between the USSP and Safeguards and current practices. A review of this document by Safeguards and the USSP is suggested to determine how significant the changes are and to update the document, if needed.

New and emerging developments could impact, and perhaps expand the way the USSP operates. Late in 2007, the IAEA and its external advisors embarked on a strategic planning exercise called 20/20. A related effort in Safeguards is the newly created twelve-year strategic planning activity. These longer term plans attempt to forecast international economic, political, and technological trends impacting IAEA and Safeguards missions and to use these trends to project changing responsibilities and their effects on budgets and schedules. Although the USSP has already encouraged Safeguards to think more strategically through several technology roadmapping workshops, the results of the 20/20 report and Safeguards new long-range planning effort may add impetus to the increase in strategic planning activities in support program projects.

The DOE is proposing a new program plan called the Next Generation Safeguards Initiative (NGSI) designed to revitalize safeguards technology in the United States and develop human resources to address on-going attrition in the nuclear industry and government areas. Many of the NGSI projects and technologies could become candidates for formal transfer to the IAEA through the USSP process. It is critical that NGSI projects are effectively coordinated with the USSP, which provides a well-functioning, established mechanism for identifying IAEA needs and communicating them to technology developers.

Conclusions

The core mission of the USSP has remained relatively unchanged for over thirty years. It continues to provide U.S. technology, expertise, and equipment in response to Safeguards requests for assistance. A number of formal and informal policies and procedures govern its operation. The USSP and Safeguards have worked together to adjust and improve processes in response to technology and lessons learned. New initiatives at the IAEA and at DOE may impact future USSP processes.

References

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2 "Memorandum of Understanding," Agreement between the U.S. and IAEA regarding Junior Professional Officers provided by the U.S. to work at the IAEA, signed July 13 and 14, 2004.

3 SSTS Process Statements, http://www.bnl.gov/ISPO/process_statements.asp.

4 "Research and Development Programme for Nuclear Verification 2008-2009," International Atomic Energy Agency, 2008.

5 Pepper, Susan, "U.S. Support Program Topical Meetings, 1999 to 2008," presented at the 49th INMM Annual Meeting, Nashville, TN, July 2008.